Fire Apparatus Driver/Operator

Course Plan

Course Details

Certification: Fire Apparatus Driver/Operator (all apparatus types)

CTS Guide: Fire Apparatus Driver/Operator (2017)

Description: This course provides the knowledge and skills needed to perform preventive maintenance on and drive or operate a fire apparatus. Topics include routine tests, inspections, and servicing functions; operating, backing, maneuvering, and turning a fire apparatus under a variety of conditions; and operating all fixed systems and equipment on a fire apparatus. Fulfills the requirements for a Class C driver's license fire fighter endorsement.

Designed For: Personnel who drive and operate a fire apparatus

Course Prerequisites: A valid driver's license

Standard: Successful completion of all skills and activities

Achieve a minimum score of 80% on a cognitive summative test

Hours (Total): 40 hours (17.5 lecture / 22.5 application)

Maximum Class Size: 30

Instructor Level: One primary instructor and sufficient assistant instructors to meet skills ratio requirements

Instructor/Student Ratio: 1:30 (lecture) / 1:10 (application)

Restrictions: Sufficient fire apparatus and space to accommodate classroom and skills training

SFT Designation: CFSTES

Table of Contents

Required Resources

Instructor Resources

To teach this course, instructors need:

- *Fire Apparatus Driver/Operator: Pump, Aerial, Tiller, and Mobile Water Supply* (Jones & Bartlett, current edition)
  or
  Pumping and Aerial Apparatus Driver/Operator Handbook, (IFSTA, current edition)
- Maintenance and inspection forms
- Manufacturer's specifications and requirements
- Applicable state and local laws

Online Instructor Resources

The following instructor resources are available online at https://osfm.fire.ca.gov/divisions/state-fire-training/cfstes-professional-certification/:

- Fire Apparatus Driver/Operator required activities
  - Activity 3-3(a): Alley Dock
  - Activity 3-3(b): Station Parking
  - Activity 3-4: Serpentine
  - Activity 3-5: Confined Space Turnaround
  - Activity 3-6: Diminishing Clearance

Student Resources

To participate in this course, students need:

- *Fire Apparatus Driver/Operator: Pump, Aerial, Tiller, and Mobile Water Supply* (Jones & Bartlett, current edition)
  or
  Pumping and Aerial Apparatus Driver/Operator Handbook (IFSTA, current edition)
- Personal protective equipment

Facilities, Equipment, and Personnel

The following facilities, equipment, or personnel are required to deliver this course:

- Standard learning environment or facility
- Writing board or paper conference pads
- Markers, erasers
- Computer or tablet with presentation or other viewing software
- Amplification devices
- Projector and screen
- Sufficient fire apparatus to accommodate the students in the class
  - Recommend at least 30 minutes of drive time per student across Topics 3-3 through 3-6.

- Tools and equipment for inspection and testing
- Tape measure
- Traffic cones
- Delineators
- Left front tire marker
- Optional straight line marker
- Vertical obstacle
- Spotters
- Personal protective equipment (students)
- Adequate space to accommodate the required skills

Time Table

Segment	Lecture	Application	Unit Total
Unit 1: Introduction			
Topic 1-1: Orientation and Administration	0.5	0.0	
Topic 1-2: Fire Apparatus Driver/Operator Certification	0.5	0.0	
Unit 1 Totals	**1.0**	**0.0**	**1.0**
Unit 2: Preventive Maintenance			
Topic 2-1: Perform Visual and Operational Checks	5.0	1.0	
Topic 2-2: Document Visual and Operational Checks	0.5	0.5	
Unit 2 Totals	**5.5**	**1.5**	**7.0**
Unit 3: Operating/Driving			
Topic 3-1: Operate a Fire Apparatus	6.0	0.5	
Topic 3-2: Operate a Vehicle Using Defensive Driving Techniques	3.0	0.5	
Topic 3-3: Back a Vehicle from a Roadway into a Restricted Space	0.25	*	
Topic 3-4: Maneuver a Vehicle around Obstructions	0.25	*	
Topic 3-5: Turn a Fire Apparatus 180 Degrees within a Confined Space	0.25	*	
Topic 3-6: Maneuver a Fire Apparatus in Areas with Restricted Clearances	0.25	*	
Topic 3-7: Operate All Fixed Systems and Equipment on a Fire Apparatus	1.0	0.0	
Unit 3 Totals	**11.0**	**19.0**	**30.0**
Summative Assessment			
Determined by AHJ or educational institution	**TBD**	**2.0**	**2.0**
Skills Practice (Lab / Sets and Reps)			
Determined by AHJ or educational institution	**TBD**	**TBD**	**TBD**
Course Totals	**17.5**	**22.5**	**40.0**

* Individual application time determined by instructor for a total of 18 hours for Unit 3. Recommend at least 30 minutes of drive time per student across Topics 3-3 through 3-6.

Time Table Key

1. The Time Table documents the amount of time required to deliver the content included in the course plan.

2. Time is documented using the quarter system: 15 min. = .25 / 30 min. = .50 / 45 min. = .75 / 60 min. = 1.0.

3. The Course Totals do not reflect time for lunch (1 hour) or breaks (10 minutes per each 50 minutes of instruction or assessment). It is the instructor's responsibility to add this time based on the course delivery schedule.

4. Application (activities, skills exercises, and formative testing) time will vary depending on the number of students enrolled. The Application time documented is based on the maximum class size identified in the Course Details section.

5. Summative Assessments are determined and scheduled by the authority having jurisdiction. These are not the written or psychomotor State Fire Training certification exams. These are in-class assessments to evaluate student progress and calculate course grades.

Unit 1: Introduction

Topic 1-1: Orientation and Administration

Terminal Learning Objective

At the end of this topic a student will be able to identify facility and classroom requirements and identify course objectives, events, requirements, assignments, activities, skills exercises, resources, evaluation methods, and participation requirements in the course syllabus.

Enabling Learning Objectives

1. Identify facility requirements
    - Restroom locations
    - Food locations
    - Smoking locations
    - Emergency procedures
2. Identify classroom requirements
    - Start and end times
    - Breaks
    - Electronic device policies
    - Special needs and accommodations
    - Other requirements as applicable
3. Review course syllabus
    - Course objectives
    - Calendar of events
    - Course requirements
    - Student evaluation process
    - Assignments
    - Activities and skills exercises
    - Required student resources
    - Class participation requirements

Discussion Questions

1. Determined by instructor

Application

1. Determined by instructor

Instructor Notes

1. None

Topic 1-2: Fire Apparatus Driver/Operator Certification

Terminal Learning Objective

At the end of this topic a student will be able to identify the requirements for each Fire Apparatus Driver/Operator certification and be able to describe the certification task book and examination process.

Enabling Learning Objectives

1. Identify the different levels of certification in the Fire Apparatus Driver/Operator certification track
   - Pumping Apparatus
   - Aerial Apparatus
   - Tillered Apparatus
   - Wildland Fire Apparatus
   - Water Tender
2. Identify the prerequisites for certification
   - OSFM certified Fire Fighter 1
     or
   - Appointment to the rank of Officer (Lieutenant or higher) or CAL FIRE rank of Fire Apparatus Engineer waives this certification prerequisite. (*Performing in an "acting" capacity does not fulfill this requirement.*)
     and
   - Valid Class C Firefighter Endorsed **or** Commercial A **or** Commercial B driver's license (per California Vehicle Code, Section 12804.11)
3. Identify the courses required for certification*
   - Pumping Apparatus
     - 1A: Fire Apparatus Driver/Operator
     - 1B: Pumping Apparatus Operations
   - Aerial Apparatus
     - 1A: Fire Apparatus Driver/Operator
     - 1C: Aerial Apparatus Operations
   - Tillered Apparatus
     - 1A: Fire Apparatus Driver/Operator
     - 1C: Aerial Apparatus Operations
     - 1D: Tillered Apparatus Operations
   - Wildland Fire Apparatus
     - 1A: Fire Apparatus Driver/Operator
     - 1B: Pumping Apparatus Operations
     - 1E: Wildland Fire Apparatus Operations
   - Water Tender
     - 1A: Fire Apparatus Driver/Operator
     - 1B: Pumping Apparatus Operations
     - 1F: Water Tender Operations
4. Identify the exams required for certification
   - No exams outside of class testing

5. Identify the task book requirements for certification
    - Pumping Apparatus Certification Task Book (2017)
    - Aerial Apparatus Certification Task Book (2017)
    - Tillered Apparatus Certification Task Book (2017)
    - Wildland Fire Apparatus Certification Task Book (2017)
    - Water Tender Certification Task Book (2017)
6. Identify the experience requirements for certification (one of the following)
    - A minimum of one year full-time paid experience in a California fire department with the primary responsibility as a driver/operator on the apparatus for which the candidate seeks certification
    - A minimum of two years volunteer or part-time paid experience in a California fire department with the primary responsibility as a driver/operator on the apparatus for which the candidate seeks certification
7. Identify the position requirements for certification
    - Appointed to the rank or position of Fire Apparatus Driver/Operator (performing in an acting capacity does not qualify)
8. Describe the certification task book process
9. Describe the certification testing process
    - Not applicable

Discussion Questions

1. Determined by instructor

Application

1. Determined by instructor

Instructor Notes

1. None

* All courses for certification should be 2008 or newer.

Unit 2: Preventive Maintenance

Topic 2-1: Perform Visual and Operational Checks

Terminal Learning Objective

At the end of this topic a student, given a fire apparatus, tools and equipment, manufacturer's specifications and requirements, and AHJ policies and procedures, will be able to perform visual and operational checks the systems and components of a fire apparatus to verify their operational status.

Enabling Learning Objectives

1. Describe fire apparatus systems and components
    - Braking system
    - Coolant system
    - Electrical system
    - Exhaust system
    - Fuel systems
    - Steering and suspension systems
    - Batteries
    - Belts
    - Body, frame, and cab
    - Fluids
    - Lighting
    - Oil and lubrication
    - Tires
    - Tools, appliances, and equipment
2. Identify manufacturer specifications and requirements
3. Identify AHJ policies and procedures
4. Describe how to use tools and equipment for preventative maintenance
5. Identify system problems and how to correct them
6. Identify out-of-service criteria
7. Use tools and equipment
8. Inspect fire apparatus
9. Recognize system problems and out-of-service criteria
10. Correct any deficiency noted according to policies and procedures and/or manufacturer specifications and requirements

Discussion Questions

1. How has diesel exhaust technology changed recently?
2. Why do fire apparatus need to be inspected?
3. Can you describe a situation when a fire apparatus mechanically failed?
    - Why did this failure occur?
4. What is your jurisdiction's fire apparatus inspection procedure?

Application

1. Given fire apparatus and inspection forms, divide students into small groups and have each group perform a fire apparatus inspection. Students will present their findings after the activity in Topic 2-2.

Instructor Notes

1. Bring materials for the Application.
2. Topics 2-1 and 2-2 can be taught concurrently.

CTS Guide Reference: CTS 1-1

Topic 2-2: Document Visual and Operational Checks

Terminal Learning Objective

At the end of this topic a student, given maintenance and inspection forms, will be able to document routine tests, inspections, and servicing functions by checking all items for proper operation and reporting any deficiencies.

Enabling Learning Objectives

1. Identify AHJ requirements for documenting performed maintenance
2. Describe the importance of keeping accurate records
3. Use tools and equipment
4. Complete related AHJ forms

Discussion Questions

1. What are your jurisdiction's requirements for documenting performed maintenance or requesting repairs?
2. At what intervals does your jurisdiction require you to document your inspection?
3. What are the consequences of falsifying inspection documents?

Application

1. Using the fire apparatus inspection completed in Topic 2-1, have each group document their fire apparatus inspection using a form provided by the instructor and present their findings to the class.

Instructor Notes

1. Topics 2-1 and 2-2 can be taught concurrently.

CTS Guide Reference: CTS 1-2

Unit 3: Operations

Topic 3-1: Operate a Fire Apparatus

Terminal Learning Objective

At the end of this topic a student, given a fire apparatus, applicable state and local laws, AHJ policies and procedures, and a predetermined route on a public way that incorporates the maneuvers and features a driver/operator is expected to encounter during normal operations, will be able to operate a fire apparatus following a predetermined route on a public way in compliance with all applicable state and local laws and policies and procedures of the jurisdiction.

Enabling Learning Objectives

1. Describe the importance of wearing passenger restraint devices to ensure crew safety
2. Identify common causes of fire apparatus accidents
3. Recognize that fire apparatus drivers/operators are responsible for the safe and prudent operation of the apparatus under all conditions
4. Describe proper positioning of a fire apparatus
5. Describe the effects of liquid surge, braking reaction time, and load factors on apparatus control
6. Describe the effects of high center of gravity on roll-over potential, general steering reactions, speed, and centrifugal force
7. Identify applicable laws and regulations
   - Driver's license requirements
   - Medical requirements
8. Identify AHJ policies and procedures
9. Describe principles of skid avoidance, night driving, shifting, and gear patterns
10. Describe how to negotiate intersections, railroad crossings, and bridges
11. Identify weight and height limitations for both roads and bridges
12. Describe how to apply automatic braking systems in wet and dry conditions
13. Describe how to identify and operate automotive gauges
14. Identify operational limits of different types of fire apparatus
15. Operate passenger restraint devices
16. Maintain safe following distances
17. Maintain control of the fire apparatus while accelerating, decelerating, and turning, given road, weather, and traffic conditions
18. Operate under adverse environmental or driving surface conditions
19. Use automotive gauges and controls

Discussion Questions

1. Who is responsible for ensuring that passengers wear restraint devices?
2. What is the potential for liability if you are involved in an accident while operating an apparatus?
3. What is the potential for emotional distress if you are involved in an accident while operating an apparatus?
4. What factors do you need to consider when driving an apparatus in inclement weather?

5. Does your jurisdiction have any specific operational limits?
6. How is driving a fire apparatus different from driving your personal vehicle?
7. How would you position a fire apparatus at a _____?

Application

1. Given a fire apparatus accident, have students work in small groups to develop recommendations for preventing a reoccurrence and present their findings to the class.

Instructor Notes

1. Topics 3-1 and 3-2 can be taught concurrently.

CTS Guide Reference: CTS 2-1 and CTS 2-4 (liquid surge), CTS 2-5 (liquid surge)

Topic 3-2: Operate a Fire Apparatus Using Defensive Driving Techniques

Terminal Learning Objective

At the end of this topic a student, given a fire apparatus, applicable laws and regulations, AHJ policies and procedures, and an assignment, will be able to operate a fire apparatus during emergency and nonemergency responses using defensive driving techniques while maintaining control of the apparatus.

Enabling Learning Objectives

1. Review AHJ policies and procedures related to emergency response
2. Describe applicable laws and regulations related to emergency response
   - California Vehicle Code
   - Local jurisdictional requirements
3. Describe defensive driving techniques for emergency and nonemergency response

Discussion Questions

1. What is your jurisdiction's policy on Code 3 driving?
2. What should you consider when approaching an intersection?

Application

1. Given a topic and the California Vehicle Code (CVC), have students work in small groups to identify the applicable CVC section and prepare a brief summary highlighting its important points to present to the class.

Instructor Notes

1. Bring materials for the Application.
2. Topics 3-1 and 3-2 can be taught concurrently.

CTS Guide Reference: CTS 2-1

Topic 3-3: Back a Fire Apparatus from a Roadway into a Restricted Space

Terminal Learning Objective

At the end of this topic a student, given a fire apparatus, a spotter, and a restricted space requiring 90-degree right- and left-hand turns from the roadway (12 feet wide), will be able to back a fire apparatus from a roadway and park in a space with restrictions on both the right and left sides of the apparatus without stopping, pulling forward, or striking any obstructions.

Enabling Learning Objectives

1. Identify fire apparatus dimensions
2. Describe turning characteristics
3. Describe spotter signaling
4. Describe principles of safe fire apparatus operation when backing a fire apparatus into a restricted space
5. Use mirrors to judge fire apparatus clearance

Discussion Questions

1. What type of communication do you need with your spotter?
2. What are the dangers of backing your fire apparatus?

Application

1. Activity 3-3(a): Alley Dock or Activity 3-3(b): Station Parking

CTS Guide Reference: CTS 2-2

Topic 3-4: Maneuver a Fire Apparatus around Obstructions

Terminal Learning Objective

At the end of this topic a student, given a fire apparatus, a spotter, and a roadway with obstructions, will be able to maneuver a fire apparatus around obstructions on a roadway while moving forward and in reverse without stopping to change the direction of travel or striking any obstructions.

Enabling Learning Objectives

1. Identify fire apparatus dimensions
2. Describe turning characteristics
3. Describe the effects of liquid surge
    - Shifting weight
    - Center of gravity
    - Stopping distance
    - Mitigation features (baffles, emergency stability controls)
    - Driving techniques
4. Describe spotter signaling
5. Describe principles of safe fire apparatus operation when maneuvering around obstructions
6. Use mirrors to judge fire apparatus clearance

Discussion Questions

1. How do you determine the pivot point of your fire apparatus?
2. How is liquid surge going to affect apparatus control?

Application

1. Activity 3-4: Serpentine

CTS Guide Reference: CTS 2-3

Topic 3-5: Turn a Fire Apparatus 180 Degrees within a Confined Space

Terminal Learning Objective

At the end of this topic a student, given a fire apparatus, a spotter, and an area in which the fire apparatus cannot perform a U-turn without stopping and backing up, will be able to turn a fire apparatus 180 degrees within a confined space without striking any obstructions.

Enabling Learning Objectives

1. Identify fire apparatus dimensions
2. Describe turning characteristics
3. Describe spotter signaling
    - More blind spots during this operation
4. Describe principles of safe fire apparatus operation when turning 180 degrees in a confined space
5. Use mirrors to judge fire apparatus clearance

Application

1. Activity 3-5: Confined Space Turnaround

CTS Guide Reference: CTS 2-4

Topic 3-6: Maneuver a Fire Apparatus in Areas with Restricted Clearances

Terminal Learning Objective

At the end of this topic a student, given a fire apparatus and a course with restricted horizontal and vertical clearances, will be able to maneuver a fire apparatus in areas with restricted horizontal and vertical clearances and accurately judge the ability of the apparatus to pass through the openings without striking any obstructions.

Enabling Learning Objectives

1. Identify fire apparatus dimensions
2. Describe turning characteristics
3. Describe spotter signaling
    - Watch for overhangs and awnings
4. Describe principles of safe fire apparatus operation when maneuvering in areas with restricted clearances
5. Use mirrors to judge fire apparatus clearance

Discussion Questions

1. Where do you find the height of a fire apparatus?
2. Why is the height important?

Application

1. Activity 3-6: Diminishing Clearance

CTS Guide Reference: CTS 2-5

Topic 3-7: Operate All Fixed Systems and Equipment on a Fire Apparatus

Terminal Learning Objective

At the end of this topic a student, given fixed systems and equipment, manufacturer's specifications and requirements, and AHJ policies and procedures, will be able to operate all fixed systems and equipment on a fire apparatus not specifically addressed elsewhere in this standard (NFPA 1002 – chapter 4) in accordance with the applicable instructions and policies.

Enabling Learning Objectives

1. Identify fixed systems and equipment on a fire apparatus
    - Electric power generators
    - Scene lighting
    - Electrical power distribution equipment
    - Rescue tools
    - Other jurisdictional fixed systems or equipment
2. Describe manufacturer's specifications and requirements
3. Identify AHJ policies and procedures
4. Deploy, energize, and monitor the system or equipment (if applicable)
5. Recognize and correct system problems according to AHJ policies and procedures and/or manufacturer specifications and requirements

Discussion Questions

1. What types of fixed systems and equipment do you have on your fire apparatus?
2. How often should fixed systems or equipment be inspected?
    - To what detail?
3. In which order do you inspect your fixed systems?

Application

1. Determined by instructor

CTS Guide Reference: CTS 2-6

How to Read a Course Plan

A course plan identifies the details, logistics, resources, and training and education content for an individual course. Whenever possible, course content is directly tied to a national or state standard. SFT uses the course plan as the training and education standard for an individual course. Individuals at fire agencies, academies, and community colleges use course plans to obtain their institution's consent to offer course and provide credit for their completion. Instructors use course plans to develop syllabi and lesson plans for course delivery.

Course Details
The Course Details segment identifies the logistical information required for planning, scheduling, and delivering a course.

Required Resources
The Required Resources segment identifies the resources, equipment, facilities, and personnel required to delivery the course.

Unit
Each Unit represents a collection of aligned topics. Unit 1 is the same for all SFT courses. An instructor is not required to repeat Unit 1 when teaching multiple courses within a single instructional period or academy.

Topics
Each Topic documents a single Terminal Learning Objective and the instructional activities that support it.

Terminal Learning Objective
A Terminal Learning Objective (TLO) states the instructor's expectations of student performance at the end of a specific lesson or unit. Each TLO includes a task (what the student must be able to do), a condition (the setting and supplies needed), and a standard (how well or to whose specifications the task must be performed). TLOs target the performance required when students are evaluated, not what they will do as part of the course.

Enabling Learning Objectives
The Enabling Learning Objectives (ELO) specify a detailed sequence of student activities that make up the instructional content of a lesson plan. ELOs cover the cognitive, affective, and psychomotor skills students must master in order to complete the TLO.

Discussion Questions
The Discussion Questions are designed to guide students into a topic or to enhance their understanding of a topic. Instructors may add to or adjust the questions to suit their students.

Application
The Application segment documents experiences that enable students to apply lecture content through cognitive and psychomotor activities, skills exercises, and formative testing. Application experiences included in the course plan are required. Instructors may add additional application experiences to suit their student population if time permits.

Instructor Notes
The Instructor Notes segment documents suggestions and resources to enhance an instructor's ability to teach a specific topic.

CTS Guide Reference
The CTS Guide Reference segment documents the standard(s) from the corresponding Certification Training Standard Guide upon which each topic within the course is based. This segment is eliminated if the course is not based on a standard.

Skill Sheet
The Skill Sheet segment documents the skill sheet that tests the content contained within the topic. This segment is eliminated if the course does not have skill sheets.